SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-41

Name: Loss Lake **County**: Minnehaha
Legal Description: T101- R52-Sec. 4
Location from nearest town: ½ west, 4½ south and ½ east of Humboldt, SD.

Dates of present survey: July 9-10, 2008
Date last surveyed: June 21-22, 2006

Primary Game and Forage Species	Other Species
Black Crappie	Black Bullhead
Yellow Perch	Orange-spotted Sunfish
Channel Catfish	Green Sunfish
Walleye	Common Carp

PHYSICAL DATA

Surface Area: 86 acres
Maximum depth: 8.5 feet
Volume: Unknown
Contour map available: No
OHWM elevation: None set
Outlet elevation: None set
Watershed: 1,920 acres
Mean depth: 6.9 feet
Shoreline length: Unknown
Date mapped: NA
Date set: NA
Date set: NA
Lake elevation observed during the survey: Full
Beneficial use classifications: (6) warmwater marginal fish propagation, (7) immersion recreation, (8) limited-contact recreation and (9) fish and wildlife propagation and stock watering.

Ownership of Lake and Adjacent Lakeshore Properties

Loss Lake is not listed as a meandered lake in the State of South Dakota Listing of Meandered Lakes, but the fishery is managed by the South Dakota Department of Game, Fish, and Parks (GFP). Most of the western shoreline is owned by GFP and consists of a Lake Access Area and a Game Production Area. The remainder of the shoreline is privately owned.

Fishing Access

The Loss Lake Access Area consists of a new, concrete plank boat ramp, dock, fishing pier and a gravel parking lot located on the southwest corner of the lake. Shoreline improvements have also been planned. Shore fishing is difficult due to high banks along the shoreline.

Field Observations of Water Quality and Aquatic Vegetation

The water in Loss Lake was fairly clear with a Secchi depth measurement of 0.91 m (36 in). Sago pondweed (*Potamageton pectinatus*) and clasping leaf pondweed (*Potamageton richardsonii*) was abundant around much of the lake. Scattered patches of cattail (*Typha spp.*) and bulrush (*Scirpus spp.*) were present near shore.

BIOLOGICAL DATA

Methods:

Loss Lake was sampled on July 9-10, 2008 with three overnight gill net sets and five overnight trap net sets. The trap nets are constructed with 19-mm-bar-mesh (¾ in) netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads. The gill nets are 45.7 m long x 1.8 m deep (150 ft long x 6 ft deep) with one 7.6 m (25 ft) panel each of 13, 19, 25, 32, 38 and 51-mm-bar-mesh (½, ¾, 1, 1¼, 1½, and 2 in) monofilament netting. Gill net and trap net sites are displayed in Figure 4.

Results and Discussion:

Gill Net Catch

Yellow perch (52.1%), black bullheads (44.2%), channel catfish (1.7%), and walleye (1.2%) were the most abundant species sampled in the gill nets (Table 1). Common carp and black crappie were also sampled.

Table 1. Total catch from three overnight gill net sets at Loss Lake, Minnehaha County, July 9-10, 2008.

Species	Number	Percent	CPUE[1]	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Yellow Perch	520	52.1	173.3	±31.4	24.1	--	--	102
Black Bullhead	442	44.2	147.3	±50.7	75.9	0	0	95
Channel Catfish	17	1.7	5.7	±2.3	2.1	100	0	81
Walleye	12	1.2	4.0	±1.5	0.0	100	0	103
Common Carp	7	0.7	2.3	±2.4	2.8	--	--	--
Black Crappie	1	0.1	0.3	±0.4	0.3	--	--	--

* 5 years (1998, 2000, 2002, 2004, 2006)

[1] See Appendix A for definitions of CPUE, PSD, and mean Wr.

Trap Net Catch

Black bullheads dominated the trap net catch (96.3%). Yellow perch, black crappie, walleye, common carp, and channel catfish were also sampled.

Table 2. Total catch from five overnight trap net sets at Loss Lake, Minnehaha County, July 9-10, 2008.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	1,062	96.3	212.4	±14.3	468.2	0	0	87
Yellow Perch	22	2.0	4.4	±3.7	9.2	22	0	98
Black Crappie	10	0.9	2.0	±1.6	6.0	0	0	116
Walleye	5	0.5	1.0	±1.0	0.0	--	--	--
Common Carp	3	0.3	0.6	±0.5	0.0	--	--	--
Channel Catfish	1	0.1	0.2	±0.3	0.2	--	--	--

* 5 years (1998, 2000, 2002, 2004, 2006)

Yellow Perch

Management objective: Maintain a yellow perch population with a gill-net CPUE of at least 50 with a PSD range of 30-60.

Yellow perch gill-net CPUE increased significantly (Table 3) due to a large year class produced in 2007. The gill net sample contained 98% age-1 fish. The recent stockings (Table 7) may have provided the brood stock that produced the large year class. There has been little natural reproduction prior to 2007 which is similar to other lakes in the region.

Table 3. Yellow perch gill-net CPUE, PSD, RSD-P, and mean Wr for Loss Lake, Minnehaha County, 2000-2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean*
CPUE	53.0		28.0		17.5		2.5		173.3	24.1
PSD	40		10		13		--		--	32
RSD-P	18		4		13		--		--	18
Mean Wr	83		110		104		--		102	96

* 5 years (1998, 2000, 2002, 2004, 2006)

Black Crappie

Management objective: Maintain a crappie fishery with a trap-net CPUE of at least 20 and PSD of at least 40.

Only a few age-1 black crappies were sampled with trap nets this year (Table 4, Figure 2). Consistently poor natural reproduction has resulted in low crappie abundance .

Table 4. Black crappie trap-net CPUE, PSD, RSD-P, and mean Wr for Loss Lake, Minnehaha County, 1998-2006.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean*
CPUE	15.6		3.2		3.8		1.0		2.0	6.0
PSD	100		13		100		--		0	74
RSD-P	88		7		22		--		0	47
Mean Wr	124		128		118		--		116	121

5 years (1998, 2000, 2002, 2004, 2006)

Black Bullhead

Management objective: Maintain a black bullhead population with a trap-net net CPUE of less than 100.

Black bullhead CPUE increased slightly this year and is still substantially higher than our objective (Table 5), Small fish continue to dominate the population (Figure 3). GFP crews removed bullheads from the lake in 2003, 2004 and 2006 and recent introductions of channel catfish and walleye were made in an attempt to decrease black bullhead numbers and provide more angling opportunity.

Table 5. Black bullhead trap-net CPUE, PSD, RSD-P, and mean Wr for Loss Lake, Minnehaha County, 1998-2006.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean*
CPUE	1,112.6		546.2		243.6		198.0		212.4	468.2
PSD	14		3		0		4		0	4
RSD-P	0		1		0		0		0	0
Mean Wr	100		99		90		82		87	93
Mean Length (mm)			162		151		186		176	166

* 5 years (1998, 2000, 2002, 2004, 2006)

All Species

Adult channel catfish were introduced in 2005 and juvenile walleyes in 2006 (Table 6). A relatively high gill-net CPUE of channel catfish at 2 years after stocking indicates good survival. Anglers have also reported catching channel catfish and walleyes.

Table 6. Gill-net (GN) and trap-net (TN) CPUE for all fish species sampled in Loss Lake, Minnehaha County, 2000-2008.

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008
COC (GN)	10.3		--		--		2.0		2.3
COC (TN)	0.2		--		--		--		0.6
WHS (GN)	--		--		--		--		--
WHS (TN)	0.2		--		--		--		--
BLB (GN)	81.3		88.3		79.0		114.0		147.3
BLB (TN)	1,112		546.2		243.6		198.0		212.4
CCF (GN)	--		--		--		10.5		5.7
CCF (TN)	--		--		--		1.0		0.2
NOP (GN)	0.3		--		--		--		--
NOP (TN)	--		--		--		--		--
GSF (GN)	0.6		--		--		--		--
GSF (TN)	4.2		--		0.2		0.4		--
OSF (GN)	--		--		2.0		--		--
OSF (TN)	0.2		--		0.2		--		--
BLC (GN)	1.3		--		--		--		0.3
BLC (TN)	15.6		3.2		3.8		1.0		2.0
YEP (GN)	53.0		28.0		17.5		2.5		173.3
YEP (TN)	10.2		2.0		6.8		18.6		4.4
WAE (GN)	--		--		--		--		4.0
WAE (TN)	--		--		--		--		1.0

COC (Common Carp), WHS (White Sucker), BLB (Black Bullhead), CCF (Channel Catfish), NOP (Northern Pike), GSF (Green Sunfish), OSF (Orange-spotted Sunfish), BLC (Black Crappie), YEP (Yellow Perch),

MANAGEMENT RECOMMENDATIONS

1. Stock adult channel catfish and walleyes, if available, to control bullheads and provide diversified angling opportunity.

2. Stock yellow perch and black crappie adults to supplement limited natural reproduction.

3. Conduct lake surveys every other year to monitor the fishery.

Table 7. Stocking record for Loss Lake, Minnehaha County, 1990-2008.

Year	Number	Species	Size
1990	250	Northern Pike	Adult
1991	600	Yellow Perch	Adult
1993	2,038,500	Yellow Perch	Eyed Eggs
1995	837	Black Crappie	Adult
1999	825	Yellow Perch	Adult
2000	825	Yellow Perch	Adult
2001	987	Black Crappie	Adult
	840	Yellow Perch	Adult
2002	901	Yellow Perch	Adult
2003	1,548	Yellow Perch	Adult
	752	Yellow Perch	Juvenile
2005	804	Channel Catfish	Adult
	1,236	Yellow Perch	Adult
2006	260	Channel Catfish	Adult
	252	Yellow Perch	Adult
	2,055	Yellow Perch	Juvenile
	1,158	Walleye	Juvenile
	625	Walleye	Lrg. Fingerling

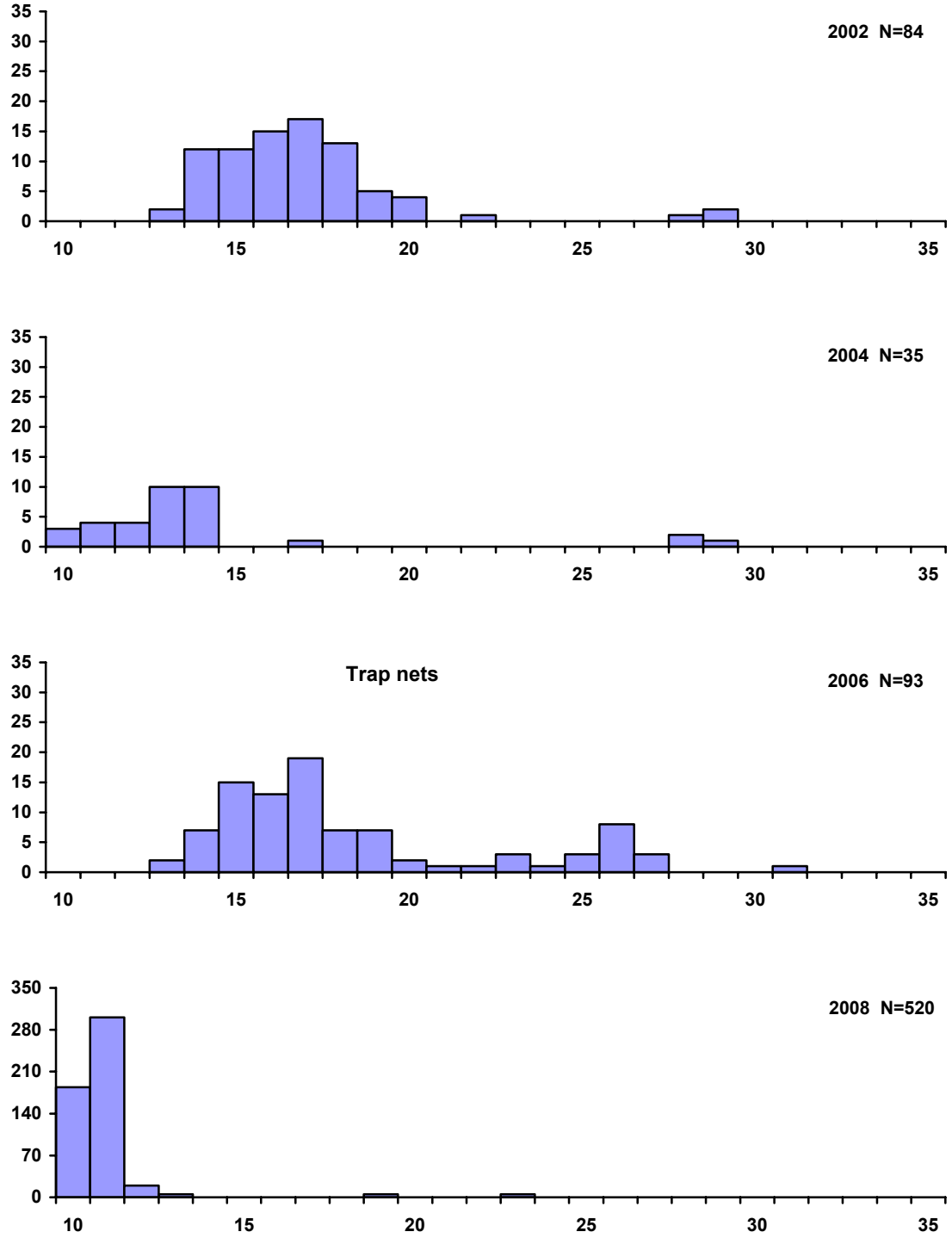

Figure 1. Length frequency histograms for yellow perch sampled with gill nets in Loss Lake, Minnehaha County, 2002, 2004 and 2008. Trap net sample was used in 2006.

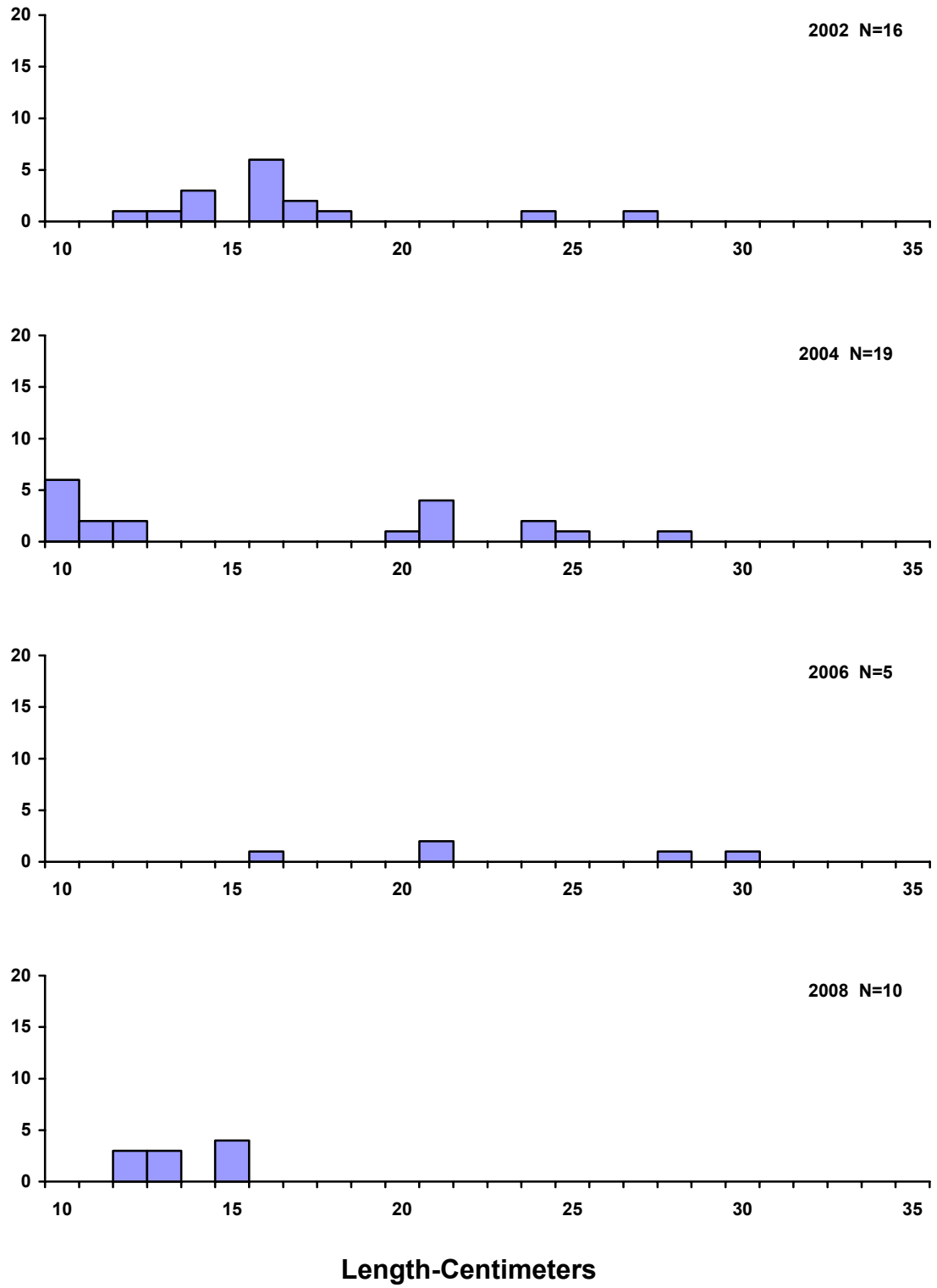

Figure 2. Length frequency histograms for black crappies sampled with trap nets in Loss Lake, Minnehaha County, 2002, 2004, 2006 and 2008.

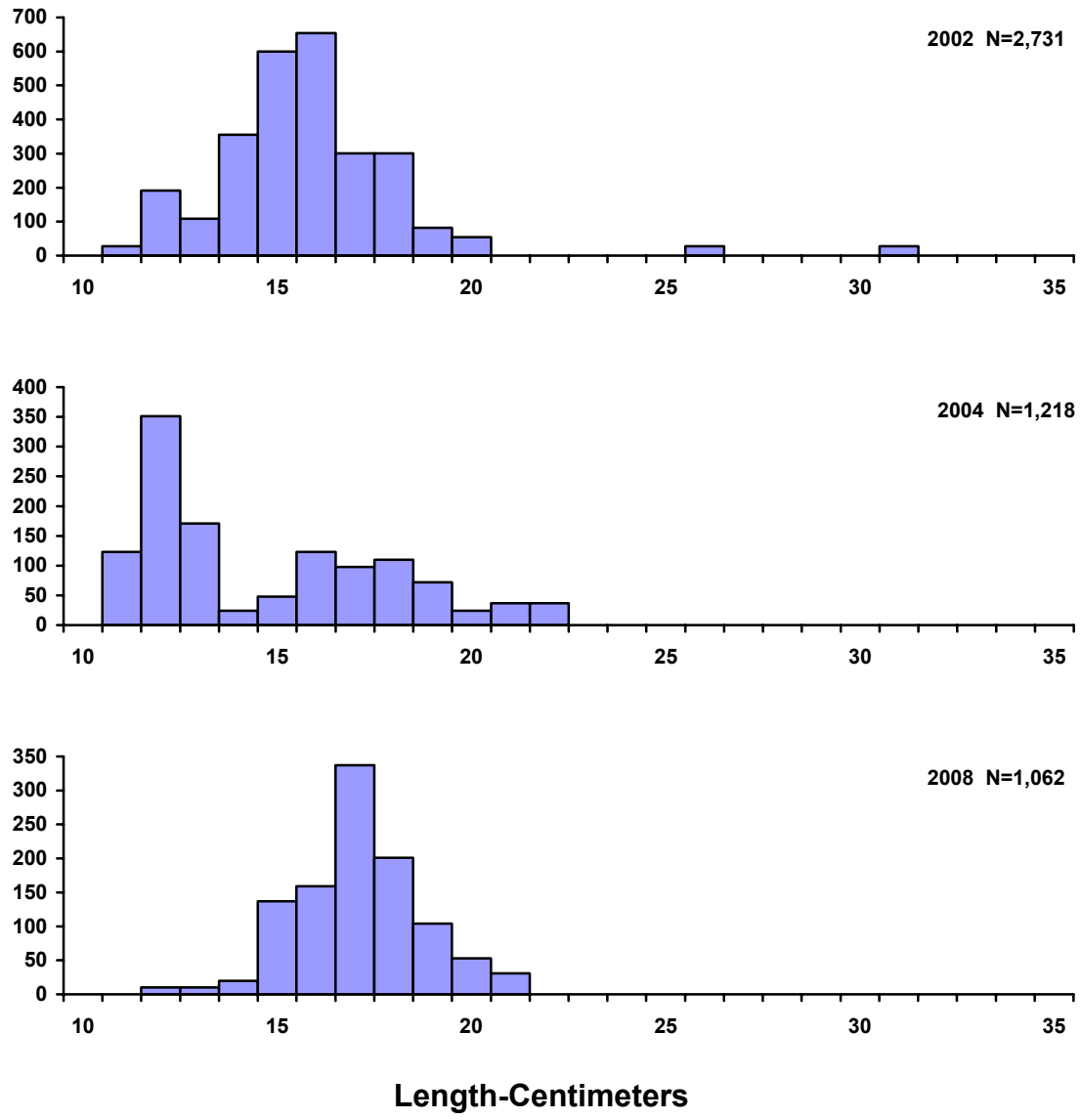

Figure 3. Length frequency histograms for black bullheads sampled with trap nets in Loss Lake, Minnehaha County, 2002, 2004, 2006 and 2008.

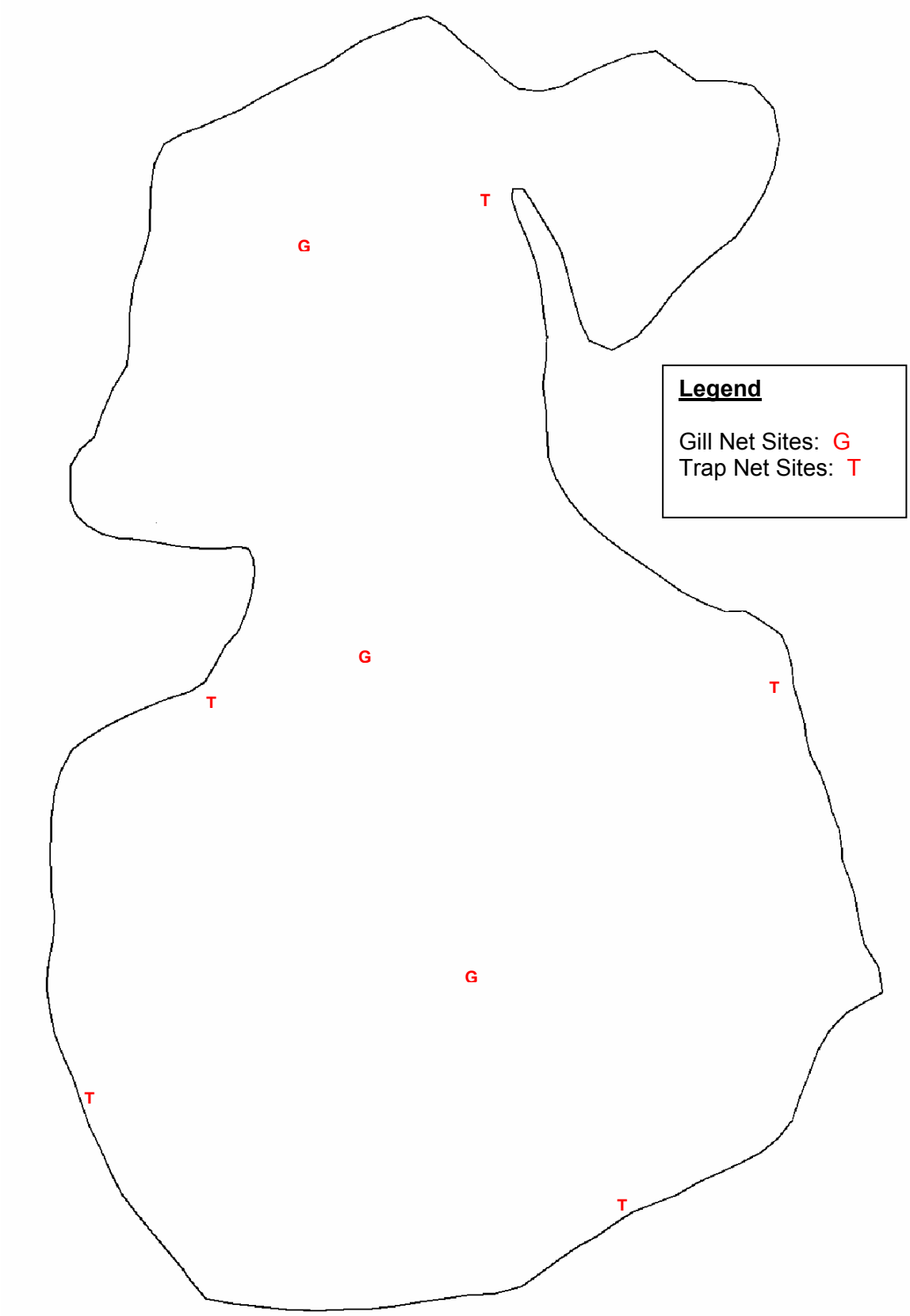

Figure 4. Sampling locations on Loss Lake, Minnehaha County, 2008.

Appendix A. A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

Catch Per Unit Effort (CPUE) is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill-net nights of effort, catch per hour of electrofishing, etc.

Proportional Stock Density (PSD) is calculated by the following formula:

$$PSD = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

Relative Stock Density (RSD-P) is calculated by the following formula:

$$RSD\text{-}P = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters.

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25	38	51	63	76
Sauger	20	30	38	51	63
Yellow perch	13	20	25	30	38
Black crappie	13	20	25	30	38
White crappie	13	20	25	30	38
Bluegill	8	15	20	25	30
Largemouth bass	20	30	38	51	63
Smallmouth bass	18	28	35	43	51
Northern pike	35	53	71	86	112
Channel catfish	28	41	61	71	91
Black bullhead	15	23	30	38	46
Common carp	28	41	53	66	84
Bigmouth buffalo	28	41	53	66	84
Smallmouth buffalo	28	41	53	66	84

For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

Relative weight (Wr) is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.